LAND TECH
LAND PLANNING, LLC

Landscape Architecture
New Urbanism Design
Land Use Planning/Permitting
Community Design
Prime Consultant - Project Management

October 12, 2007

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OFC MANAGEMENT BUDGET
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Mrs. Constance Holland
Office of State Planning Coordination
122 William Penn Street, Suite 302
Haslet Building, Third Floor
Dover, DE 19901

RE: PLUS review - PLUS 2007-02-10, Neal Property

Dear Mrs. Holland:

We appreciated the opportunity to meet with State agency planners earlier this year and to discuss plans for a proposed 250 home active adult residential land use on property near The Town of Laurel, Delaware. Land Tech Land Planning represents Samanda Properties, LLC; the owner and applicant for the subject property. We offer the following response to comments contained in the March 26, 2007 letter from your office regarding the Neal property. Our responses on behalf of the applicant are highlighted in color following each agency comment in the same order as presented in the March letter.

Executive Summary

State Strategies/Project Location

This project is located within Investment Level 2 according to the *Strategies for State Policies and Spending* document. Investment Level 2 reflects areas where growth is anticipated by local, county, and State plans in the near term future. State investments will support growth in these areas. Our office has no objections to the proposed development of this project in accordance with the relevant County codes and ordinances. With that said, we note that there are environmental features on this site such as forested areas and wetlands. We encourage you to design the site with respect for the environmental features which are present. It is strongly recommended that the applicant address the environmental comments from DNREC contained within this letter.

Street Design and Transportation

The developer should be aware of two other pending developments on Discount Land Road. All three developments will be required to improve Discount Land Road. Presently, both the Discovery project and the shopping center project have traffic impact studies in progress, which will help to define what improvements are needed.

We shall direct the project traffic engineer to coordinate their work with that of the other projects being designed in the immediate vicinity.

From the discussion at the PLUS meeting, the developer is seeking to get enough frontage on US Route 9 for an entrance there. DelDOT would encourage you to do that.

The applicant has purchased additional Route 9 frontage and, as the enclosed revised land use plan reflects, the main gateway and entrance to the planned community is from Route 9.

To improve traffic circulation and efficiency of access, especially by police and emergency medical service, within the site, DelDOT recommends that you eliminate the 15 dead-end streets. Where that is not possible, it is recommended that you use cul-de-sacs or other turnarounds so that visitors do not need to turn around in residents' driveways.

The enclosed revised land use plan reflects a reduction in dead end streets and an application of the approved turn-a-round from the State Fire Prevention Regulations.

The property includes two strips of land, each about 25 feet wide, leading out to Discount Land Road and US Route 9. If feasible, DelDOT recommends that these strips be used for bicycle and pedestrian connections to those roads.

It is the applicant's intention to convey the Discount Land Road strip to an adjacent land owner. The Route 9 strip has been combined with a separate land purchase to create a new entrance into the site as described above.

Natural and Cultural Resources

Based on Statewide Wetland Mapping Project (SWMP) mapping, palustrine scrub-shrub/forested, palustrine emergent, and palustrine unconsolidated bottom wetlands were mapped throughout much of the eastern one-third of subject parcel. These wetlands provide water quality benefits, attenuate flooding and provide important habitat for plants and wildlife. Vegetated buffers of no less than 100 feet should be employed from the edge of the wetland complex.

James C. McCulley Environmental Consulting, Inc. has been retained by the applicant to delineate all Federal jurisdictional wetlands on the property. The land use plan has been prepared using the McCulley delineation and there are NO wetlands impacts. Every effort will be made to preserve existing forested areas on the site and all disturbed areas will be revegetated. Buffers exist along all wetland boundaries identified in varying widths. However, a continuous 100 foot buffer has not been achieve.

If the existing water courses existing onsite will be used for stormwater management, then if must meet the USDA NRCS Small Pond Code 378. If the existing water course will be used for quantity control only, then any water entering the pond will need to be fully treated. It the pond is intended to be used for quality and quantity treatment and control, then concurrency will be required from adjacent landowners.

Preliminary studies by the project civil engineer indicate that the storm water quality and quantity management can be achieved within the smaller pond which is totally contained within the boundaries of the Neal property.

The Drainage Program recommends a 50-foot maintenance area on each side of Rogers Branch.

We acknowledge this recommendation and will advise the project civil engineer accordingly.

Preserve existing riparian buffers on this site to aid in the reduction of nutrients, sediment, and other pollutants entering Rogers Branch. This site will drain into Records Pond, which has existing water quality problems. Please explore methods to filter excess nutrients in stormwater runoff from this site before releasing stormwater into the Records Pond watershed.

We acknowledge this recommendation and will advise the project civil engineer accordingly.

Large isolated pockets of open space are rarely used by residents. The developer is encouraged to designate forest resources on site as open space and reduce the size of stormwater management facilities. By designating forest resources on site as passive open space the developer can prevent the removal of trees and impacts to palustrine wetlands.

As stated earlier, NO wetlands impacts are necessary to implement the attached land use plan. Every effort shall be made to minimize the cutting or disturbance of existing vegetation on the site within forested areas.

DNREC has never surveyed this property; therefore, it is unknown if there are state-rare or federally listed plants, animals or natural communities at this project site. They have records of numerous rare species downstream, therefore, maintaining adequate forested riparian buffer along Rogers Branch would be extremely important for minimizing impacts to these species and to water quality.

A Rare, Threatened and Endangered Species Habitat Review was conducted on the subject tract by JCM Environmental. No RTE species were found. A copy of the JCM report is attached.

DNREC suggests the applicant consider omitting or relocating some of the approximately 25 units/structures currently located within the southeastern quadrant of the site plan. There appears to be about 25 units/structures within this forested area. The GIS database and State wetland maps indicate that a rather large part of the forest contains wetlands. Impacts to this habitat type should be avoided as it can support an array of plant and animal species. This forest is part of a larger forest block, and larger, connected areas of forest are important for the many species of wildlife especially migratory birds.

As stated earlier, NO wetlands impacts are necessary to implement the attached land use plan. Every effort shall be made to minimize the cutting or disturbance of existing vegetation on the site within forested areas. There are sizable areas of the existing forest which were disturbed during the excavation of the borrow pits several decades ago. The main cartway and most of the housing proposed within the existing forested areas lie in zones which have been disturbed previously and consist of mounds of topsoil and overburden soil materials with scrub volunteer trees growing on them.

The following are a complete list of comments received by State agencies:

Office of State Planning Coordination – Contact: Bryan Hall 739-3090

This project is located with an Investment Level 2 according to the *Strategies for State Policies and Spending* document. Investment Level 2 reflects areas where growth is anticipated by local, county, and State plans in the near term future. State investments will support growth in these areas. Our office has no objections to the proposed development of this project in accordance with the relevant County codes and ordinances. With that said, we note that there are environmental features on this site such as forested areas and wetlands. We encourage you to design the site with respect for the environmental features which are present. It is strongly recommended that the applicant address the environmental comments from DNREC contained within this letter.

The attached revised plan addresses the DNREC comments to a great extent.

Division of Historical and Cultural Affairs – Contact: Alice Guerrant 739-5685

Nothing is known within this parcel. Historic maps first show a building in the south central part of the parcel on the USGS 15' Seaford 1915 map. There is a small area with some potential for a prehistoric-period archaeological site, but the overall potential is low. There is a historic agricultural complex (S-5900) on County Seat Rd, towards the rear of this parcel.

Acknowledged.

In the event that a Corps of Engineers permit is required on the property, the owner/developer will be required to consult with this office and may be required to do an archaeological survey, depending on the area of the permit. We will be happy to assist him through this process.
The removal of too many trees may have an adverse effect on the nearby historic farm, causing visual and noise intrusions into its setting. We recommend that the developer maintain enough of the trees to block such intrusions.

As stated earlier, NO wetlands impacts are necessary to implement the attached land use plan. Every effort shall be made to minimize the cutting or disturbance of existing vegetation on the site within forested areas.

Department of Transportation – Contact: Bill Brockenbrough 760-2109

1) Discount Land Road is a local road. DelDOT's policy is to require dedication of sufficient land to provide a minimum right-of-way width of 30 feet from the centerline on local roads. Therefore DelDOT will require right-of-way dedication along the frontage to provide any additional width needed from this project.

Acknowledged.

2) The developer should anticipate a requirement to improve Discount Land Road to meet DelDOT's local road standards from the east end of the site frontage out to Route 13. Those standards include 11-foot lanes and 5-foot shoulders.

Acknowledged.

3) The developer should be aware of two other pending developments on Discount Land Road. One is an approximately 90,000 square foot shopping center proposed by T.M. Management, LLC, for the northeast corner of Route 13 and Discount Land Road. Their site engineering is being done by Meridian Consulting Engineers. The other is a large mixed use development, known as Discovery and proposed for the east side of Route 13 and the north side of Discount Land Road albeit not contiguous to the shopping center just mentioned.

Discovery is being developed by Ocean Atlantic, with the Element Design Group handling their site design.
All three developments will be required to improve Discount Land Road, but the nature and extent of the improvements required to support Discovery will likely be greater than those needed to support this project or the shopping center. Further, the improvements needed to support Discovery can, and probably should, be phased in over time. Presently both Discovery and the shopping center have traffic impact studies in progress, which will help to define what improvements are needed.

To some extent, site access is separate from the matter of road improvements. While Discovery's frontage is somewhat removed from that of the other two properties, the access to this development and the shopping center must be coordinated.

If necessary, DelDOT can and will coordinate the efforts of the three developments, but we would prefer that the developers worked together and had one engineering firm prepare a plan for improving Discount Land Road, possibly in two or more phases. Regardless of whether they are representing the other developments as well, the developer's site engineer should contact our Subdivision Manager for Sussex County, Mr. John Fiori, regarding our specific requirements for access and off-site improvements. Mr. Fiori may be reached at (302) 760-2260.

Acknowledged.

4) From the discussion at the PLUS meeting, the developer is seeking to get enough frontage on US Route 9 for an entrance there. DelDOT would encourage them to do that. Access on more than one road is usually desirable because it allows for alternative access and a better distribution of traffic. In addition, eliminating the west entrance on Discount Land Road, which is proposed if the Route 9 access becomes available, would simplify coordination with the shopping center mentioned above.

The applicant has purchased additional Route 9 frontage and, as the enclosed revised land use plan reflects, the main gateway and entrance to the planned community is from Route 9.

5) We offer the following recommendations regarding the site design:

a) The plan includes 15 dead end streets serving 2 to 14 dwellings each. Some of these streets are necessary for the efficient development of the site, but most of them could be eliminated in favor of either loop streets or connections to adjacent streets. To improve traffic circulation and efficiency of access, especially by police and emergency medical service,

within the site, DelDOT recommends that be done. Where that is not possible, they recommend the use of cul-de-sacs or other turnarounds so that visitors do not need to turn around in residents' driveways.

b) The property includes two strips of land, each about 25 feet wide, leading out to Discount Land Road and US Route 9. If feasible, DelDOT recommends that these strips be used for bicycle and pedestrian connections to those roads.

The enclosed revised land use plan reflects a reduction in dead end streets and an application of the approved turn-a-round from the State Fire Prevention Regulations. It is the applicant's intention to convey the Discount Land Road strip to an adjacent land owner. The Route 9 strip has been combined with a separate land purchase to create a new entrance into the site as described above.

c) A stub street should be provided to the Shockley Property (Tax Parcel 2-32-6.00-54.00) to allow for a connection to a future subdivisions that could occur on it. If feasible, a stub street should be provided to the Whaley Property (Tax Parcel 2-32-6.00-106.01) as well for the same reason. From the aerial photography on file, such a connection seems as though it may be feasible but DelDOT understands that a recently created pond may preclude it.

d) Stub streets should be provided to the Jester and Conaway Properties, respectively Tax Parcels 2-32-6.00-63.03 and 64.00 for the purpose of incorporating them in the subject development if they should become available. At a minimum, we recommend that cross-access easements be provided so that the owners of those properties could tie into the development's collector streets rather than accessing Discount Land Road directly if they ever redevelop their property.

This community, as planned, will serve "active adult" 55 years and above residents. One of the primary land planning considerations for this user is security. The applicant plans to gate the two entrances to the community in an effort to provide a high degree of security with respect to entering and exiting vehicles. The addition of as many as two new points of access may cancel the security effects of the gated entrances.

The Department of Natural Resources and Environmental Control – Contact: Kevin Coyle 739-9071

Soils

According to the Sussex County soil survey update, Pepperbox-Rosedale complex, Hurlock and Udorthents were mapped on subject parcel. Pepperbox-Rosedale complex is a moderately well to well-drained upland soil that has moderate to few limitations for development. Hurlock is a poorly-drained wetland associated (hydric) that has severe limitations for development. Udorthents are soils that have been extensively modified through filling or grading practices and have variable site-specific limitations for development. The mapped udorthents on this parcel appear to be former borrow pits that have since filled with water.

Wetlands

Based on Statewide Wetland Mapping Project (SWMP) mapping, palustrine scrubshrub/ forested, palustrine emergent, and palustrine unconsolidated bottom wetlands were mapped throughout much of the eastern one-third of subject parcel. These wetlands provide water quality benefits, attenuate flooding and provide important habitat for plants and wildlife. Vegetated buffers of no less than 100 feet should be employed from the edge of the wetland complex. The developer should note that both DNREC and the U.S. Army Corps of Engineers (USACE, or "the Corps") discourage allowing lot lines to contain wetlands to minimize potential cumulative impacts resulting from unauthorized and/or illegal activities and disturbances that can be caused by homeowners.

Answered previously in this report.

Wetland Permitting Information

PLUS application materials indicate that wetlands have been delineated (presumably a field delineation). This delineation should be verified by the Corps through the Jurisdictional Determination process. Please note that impacts to palustrine wetlands are regulated by the Corps through Section 404 of the Clean Water Act. In situations where the applicant believes that the delineated wetlands on their parcel are nonjurisdictional isolated wetlands, the Corps must be contacted to make the final jurisdictional assessment. They can be reached by phone at 736-9763. Certain drainage ditches may also be jurisdictional either under the Corps Program or through the DNREC Wetland and Subaqueous Lands program. In addition, individual 404 permits and certain Nationwide Permits from the Corps also require 401 Water Quality Certification from the DNREC Wetland and Subaqueous Land Section and Coastal Zone Federal Consistency Certification from the DNREC Division of Soil and Water Conservation, Delaware Coastal Programs Section. Each of these certifications represents a separate permitting process.
To find out more about permitting requirements, the applicant is encouraged to attend a

Joint Permit Process Meeting. These meetings are held monthly and are attended by federal and state resource agencies responsible for wetland permitting. Contact Denise Rawding at (302) 739-9943 to schedule a meeting.

Acknowledged

Impervious Cover

Based on a review of the PLUS application, post-development surface imperviousness is estimated to be about 36 percent. However, given the scope and density of this project, this assessment is clearly a significant underestimate. The applicant's apparent use of natural areas (wetlands or buffers) and/or areas of functional utility (stormwater management areas) to meet the County's minimum open space requirements, artificially lowers the estimated amount of this constructed surface imperviousness from this project, resulting in a significant underestimate of its actual environmental impacts. Moreover, credit for open space should not include potential jurisdictional wetlands. For that reason, a Corps-approved wetlands delineation should be conducted prior to the open space and surface imperviousness calculations. Finally, it is also apparent that some constructed forms of surface imperviousness (i.e., rooftops, sidewalks, and roads) were omitted from the applicant's calculation for surface imperviousness, and further contributes to the estimate of this parcel's surface imperviousness and environmental impacts. It is strongly recommended, therefore, that the applicant address all of the above-mentioned concerns before conducting a finalized calculation for surface imperviousness.

Studies have shown a strong relationship between increases in impervious cover to decreases in a watershed's overall water quality. It is strongly recommended that the applicant implement best management practices (BMPs) that reduce or mitigate some of its most likely adverse impacts. Reducing the amount of surface imperviousness through the use of pervious paving materials ("pervious pavers") in lieu of asphalt or concrete in conjunction with an increase in forest cover preservation or additional tree plantings are some examples of practical BMPs that could easily be implemented to help reduce surface imperviousness.

Acknowledged

ERES Waters

This project is located adjacent to receiving waters of the Broad Creek watershed, designated as having waters of Exceptional Recreational or Ecological Significance (ERES). ERES waters are recognized as special assets of the State, and shall be protected and/ or restored, to the maximum extent practicable, to their natural condition. Provisions in Section 5.6 of Delaware's "Surface Water Quality Standards" (as amended July 11, 2004), specify that all designated ERES waters and receiving

tributaries develop a "pollution control strategy" to reduce non-point sources of pollutants through implementation of Best Management Practices (BMPs). Moreover, provisions defined in subsection 5.6.3.5 of same section, specially authorize the Department to mandate BMPs to meet standards for controlling the addition of pollutants and reducing them to the greatest degree achievable and, where practicable, implementation of a standard requiring no discharge of pollutants.

Acknowledged

TMDLs

Total Maximum Daily Loads (TMDLs) for nitrogen and phosphorus have been promulgated through regulation for the Broad Creek watershed. A TMDL is the maximum level of pollution allowed for a given pollutant below which a "water quality limited water body" can assimilate and still meet water quality standards to the extent necessary to support use goals such as, swimming, fishing, drinking water and shell fish harvesting. Although TMDLs are required by federal law, states are charged with developing and implementing standards to support these desired use goals. In the greater Broad Creek watershed, "target-rate-nutrient reductions" of 30 and 50 percent will be required for nitrogen and phosphorus, respectively. Additionally, "target-rate reductions" of 2 percent will be required for bacteria.

Acknowledged

TMDL Compliance through the Pollution Control Strategy (PCS)

As indicated above, Total Maximum Daily loads (TMDLs) for nitrogen and phosphorus have been proposed for the Broad Creek watershed. The TMDL calls for a 30 and 50 percent reduction in nitrogen and phosphorus from baseline conditions. The TMDL also calls for a 2 percent reduction in bacteria. A pollution control strategy will be used as a regulatory framework to ensure that these nutrient reduction targets are attained. The Department has developed an assessment tool to evaluate how your proposed development may reduce nutrients to meet the TMDL requirements. Additional nutrient reductions may be possible through the implementation of Best Management Practices such as wider vegetated buffers along watercourses, increasing passive, wooded open space, and the use of green-technology stormwater management treatment trains. Contact Lyle Jones at 302-739-9939 for more information on the assessment tool.

Acknowledged

Water Supply

The information provided indicates that the Town of Laurel will provide water to the proposed annexation project(s) through a central public water system. DNREC files reflect that the Town of Laurel does not currently hold a certificate of public convenience and necessity (CPCN) to provide public water in these areas. According to SB 135 that was signed on June 30, 2003 by Governor Minner, the municipality is required to give notice to the Public Service Commission when the annexation is complete. Information on CPCN requirements and applications can be obtained by contacting the Public Service Commission at (302)739-4247.

Acknowledged

Should dewatering points be needed during any phase of construction, a dewatering well construction permit must be obtained from the Water Supply Section prior to construction of the well points. In addition, a water allocation permit will be needed if the pumping rate will exceed 50,000 gallons per day at any time during operation.

All well permit applications must be prepared and signed by licensed water well contractors, and only licensed well drillers may construct the wells. Please factor in the necessary time for processing the well permit applications into the construction schedule. Dewatering well permit applications typically take approximately four weeks to process, which allows the necessary time for technical review and advertising.
Should you have any questions concerning these comments, please contact Rick Rios at 302-739-9944.

Acknowledged

Sediment and Erosion Control/Stormwater Management

Standard Comments:
A detailed sediment and stormwater plan will be required prior to any land disturbing activity taking place on the site. The plan review and approval as well as construction inspection will be coordinated through the Sussex Conservation District. Contact Jessica Watson, Program Manager, at (302) 856-7219 for details regarding submittal requirements and fees.

Acknowledged

It is strongly recommended that you contact the Sussex Conservation District to schedule a pre-application meeting to discuss the sediment and erosion control and stormwater management components of the plan. The site topography, soils mapping, pre- and postdevelopment runoff, and proposed method(s) and location(s) of stormwater management should be brought to the meeting for discussion.

Acknowledged

A Notice of Intent (NOI) for Stormwater Discharges Associated with Construction Activity must be submitted to the Division of Soil and Water Conservation along with the $195 NOI fee prior to plan approval.

Acknowledged

Applying practices to mimic the pre-development hydrology on the site, promote recharge, maximize the use of existing natural features on the site, and limit the reliance on structural stormwater components, such as maintaining open spaces, should be considered in the overall design of the project as a stormwater management technique. Each stormwater management facility should have an adequate outlet for release of stormwater. Any drainage conveyed onto this site from neighboring properties must be adequately conveyed through the site to the discharge point without interruption. Clearly address how Stormwater Quality and Quantity Treatment will be provided. If this project is eligible for a Quantity Waiver, please make the request in the stormwater narrative citing the specific regulation.

Acknowledged

Please indicate on the sediment and stormwater management plan who shall be responsible for maintenance of the stormwater management facilities both during construction and after. During the design of the sediment control and stormwater management plan, considerations should be made for maintenance (i.e. access, easements, etc.) of any structures or facilities.

Acknowledged

If a stormwater management pond is going to be utilized as a sediment trap/basin during construction it must be designed to accommodate 3600 cubic feet of storage per acre of contributing drainage area until project stabilization is complete.

Acknowledged

All ponds are required to be constructed per Pond Code 378.

Acknowledged

Please note that if the stormwater facilities will impact wetlands, a permit must be provided to the District prior to receiving approval. Please address.

Acknowledged

A Certified Construction Reviewer (CCR) is required for any project that is 50 acres or greater.

DNREC regulations require no more than 20 acres to be disturbed at more time. A phased erosion and sediment control plan and sequence of construction will be required. Under the DNREC Health and Safety Memo of 2000, all wet ponds are required to have an open space depth of 3 feet or more that comprises 50-75 percent of the area of the pond.

Acknowledged

Consideration should be made for any adjacent properties during the design of the project, including drainage and erosion/sediment control.

Acknowledged

Specific Comments:

If the existing water courses existing onsite will be used for stormwater management, then if must meet the USDA NRCS Small Pond Code 378. If the existing water course will be used for quantity control only, then any water entering the pond will need to be fully treated. It the pond is intended to be used for quality and quantity treatment and control, then concurrency will be required from adjacent landowners.

Acknowledged

Green technology best management practices are the preferred option for stormwater quality control [Delaware Sediment and Stormwater Regulations, 10.3.5].
This project is within an impaired watershed. A Total Maximum Daily Load (TMDL) has been promulgated. The applicant is encouraged to preserve any existing riparian buffers to aid in the reduction of nutrients, sediment, and other pollutants. For the further enhancement of water quality, additional widths of vegetated buffers and other water quality measures are encouraged to be implemented on this project. Additionally, the applicant should be aware that additional best management practices for storm water quality may be required by state regulation and county ordinances due to the project location in an impaired waterway.

Acknowledged

Drainage

1. The Drainage Program recommends a 50-foot maintenance area on each side of Rogers Branch. The area should be dedicated open space and utilized for mechanized maintenance, and possible spoil placement, if the branch requires periodic maintenance or future re-construction.

Acknowledged

2. The Drainage Program requests that the engineer take precautions to ensure the project does not hinder any off site drainage upstream of the project or create any off site drainage problems downstream by the release of on site storm water. The Drainage Program requests that the engineer check existing downstream ditches and pipes for function and blockages prior to the construction. Notify downstream landowners of the change in volume of water released on them.

Acknowledged

3. The Drainage Program encourages the elevation of rear yards to direct water towards the streets where storm drains are accessible for maintenance. However, the Drainage Program recognizes the need for catch basins in yards in certain cases. Therefore, catch basins placed in rear and side yards will need to be clear of obstructions and be accessible for maintenance. Decks, sheds, fences, pools, and kennels can hinder drainage patterns as well as future maintenance to the storm drain or catch basin. Deed restrictions, along with drainage easements recorded on deeds, should ensure adequate future maintenance access.

Acknowledged

4. Increase the side yard setback to 15 feet on all properties with a drainage easement on the side. The increase will allow room for equipment to utilize the entire easement and maneuver free of obstructions if the drainage conveyance requires periodic maintenance or future re-construction. The side yard setback would only increase on the side with the drainage easement.

Acknowledged

5. All catch basins in rear or side yards should have a 10-foot drainage easement around them on all sides. Place restrictions on fences, sheds, and other structures within the easement to prevent obstructions from being place next to the catch basin. Record the easement on the deed.

Acknowledged

6. Have all drainage easements recorded on deeds and place restrictions on obstructions within the easements to ensure access for periodic maintenance or future re-construction. Future property owners may not be aware of a drainage easement on their property if the easement is only on the record plan. However, by recording the drainage easement on the deed, the second owner, and any subsequent owner of the property, will be fully aware of the drainage easement on their property.

Acknowledged

7. The Statewide Wetland Mapping Project (SWMP) maps indicate the presence of palustrine wetlands on the wooded area on the southeast side of the property. The amount of proposed tree removal from this area appears excessive. The Drainage Program recommends limited tree removal in this area. Where practical, plant native trees, and shrubs to compensate for the loss of nutrient uptake and stormwater absorption the removed trees provided. Even with these measures this area may not provide adequate residential drainage. A part of the wooded area is mapped as Fallsington soil, which has a high water table and poor natural drainage. Limitations for foundations for homes of three stories or less is severe due to a high water table. Crawl spaces and basements within this area are very questionable. If this area is developed as proposed, especially with crawl spaces and basements, a statement should be on the deed informing the prospective buyers that future drainage problems are very likely.

Acknowledged. The current plan is for homes to be erected as "slab on grade" construction.

8. Preserve existing riparian buffers on this site to aid in the reduction of nutrients, sediment, and other pollutants entering Rogers Branch. This site will drain into Records Pond, which has existing water quality problems. Please explore methods to filter excess nutrients in stormwater runoff from this site before releasing stormwater into the Records Pond watershed.
For questions or clarifications, please contact Jim Sullivan at 739-9921.

Acknowledged

Open Space

Large isolated pockets of open space are rarely used by residents. The developer is encouraged to designate forest resources on site as open space and reduce the size of stormwater management facilities. By designating forest resources on site as passive open space the developer can prevent the removal of trees and impacts to palustrine wetlands.

Acknowledged

Rare Species

DNREC has never surveyed this property; therefore, it is unknown if there are state-rare or federally listed plants, animals or natural communities at this project site. They have records of numerous rare species downstream, therefore, maintaining adequate forested riparian buffer along Rogers Branch would be extremely important for minimizing impacts to these species and to water quality. To adequately protect water quality this buffer should be at least 100 feet in width. There are both lots and infrastructure within 100 feet of this riparian wetland area (in southeastern quadrant of plan) and they should be pulled out of the buffer zone.

Acknowledged. See attached RTE reports by JCM Environmental.

Forest Preservation

The applicant indicated in question #27 that this project would have a 'positive' environmental impact. Removing forest, some of which form a riparian buffer, and not having adequate wetland buffers is not ecologically a 'positive' impact. A greater effort to preserve existing trees should be made, and DNREC suggests the applicant consider omitting or relocating some of the approximately 25 units/structures currently located within the southeastern quadrant of the site plan. There appears to be about 25 units/structures within this forested area. The GIS database and State wetland maps indicate that a rather large part of the forest contains wetlands. Impacts to this habitat type should be avoided as it can support an array of plant and animal species. This forest is part of a larger forest block, and larger, connected areas of forest are important for the many species of wildlife especially migratory birds. Also, when forested areas are cleared, wildlife must disperse into the surrounding area which can result in human/animal conflicts, including interactions on the roadways. Forest removal also puts greater pressure on nearby State wildlife areas, nature preserves, State-forests and other publicly owned lands.

If trees are cleared, despite DNRECs recommendations above, they suggest that clearing not occur April 1st to July 31st to reduce impacts to nesting birds and other wildlife species that utilize forests for breeding. This clearing recommendation would only protect those species during the breeding season, because once trees are cleared the result is an overall loss of habitat.

Acknowledged. Please see response to this issue given above.

Nuisance Geese

The applicant indicated that they were going to utilize a nuisance species management plan. We recommend that vegetative buffers comprised of tall grasses, shrubs, trees or wildflowers be included in this plan to deter nuisance waterfowl such as resident Canada

geese. Waterfowl do not feel safe when they can not see the surrounding area for possible predators. These plantings should be completed as soon as possible as it is easier to deter geese when there are only a few than it is to remove them once they become plentiful.

The Division of Fish and Wildlife does not provide goose control services, and if problems arise, residents or the home-owners association will have to accept the burden of dealing with these species (e.g., permit applications, costs, securing services of certified wildlife professionals). Solutions can be costly and labor intensive; however, with a reduction in the size of the ponds, proper landscaping, monitoring, and other techniques, geese problems can be minimized.

Acknowledged

Solid Waste

Each Delaware household generates approximately 3,600 pounds of solid waste per year. On average, each new house constructed generates an additional 10,000 pounds of construction waste. Due to Delaware's present rate of growth and the impact that growth will have on the state's existing landfill capacity, the applicant is requested to be aware of the impact this project will have on the State's limited landfill resources and, to the extent possible, take steps to minimize the amount of construction waste associated with this development.

Acknowledged

Salvage Yards

One salvage yard was found within a half mile radius of the proposed site. White Salvage (0329) is located northwest of the proposed site. This is a brand-new site. DNREC-SIRB has no comments regarding the proposed site at this time due to insufficient information. However, should any evidence of a release or imminent threat of release of hazardous substances be discovered at the subject site (e.g., contaminated soil or water), please discontinue construction activities and immediately notify DNREC at the 24-hour emergency number (800.662.8802). Also, please contact SIRB as soon as possible at 302.395.2600 for additional requirements.

Acknowledged

Underground Storage Tanks

There are three inactive LUST site(s) located near the proposed project:
Laurel Save, Facility # 5-000285, Project # S9911248
Uncle Willie's # 16, Facility # 5-000836, Project # S9604074
Laurel Exxon, Facility # 5-000313, Project # S9605077
No environmental impact is expected from the above inactive/active LUST site(s). However, should any underground storage tank or petroleum contaminated soil be discovered during construction, the Tank Management Branch must be notified as soon as possible. It is not anticipated that any construction specifications would need to be changed due to petroleum contamination. However, should any unanticipated contamination be encountered and PVC pipe is being utilized, it will need to be changed to ductile steel with nitrile rubber gaskets in the contaminated areas.

Acknowledged

Air Quality

Once complete, vehicle emissions associated with this project are estimated to be 19.2 tons (38,372.4 pounds) per year of VOC (volatile organic compounds), 15.9 tons (31,769.7 pounds) per year of NOx (nitrogen oxides), 11.7 tons (23,440.3 pounds) per year of SO2 (sulfur dioxide), 1.0 ton (2,086.6 pounds) per year of fine particulates and 1,604.9 tons (3,209,801.6 pounds) per year of CO2 (carbon dioxide).
Emissions from area sources associated with this project are estimated to be 7.7 tons (15,477.3 pounds) per year of VOC (volatile organic compounds), 0.9 ton (1,703.0 pounds) per year of NOx (nitrogen oxides), 0.7 ton (1,413.2 pounds) per year of SO2 (sulfur dioxide), 0.9 ton (1,823.7 pounds) per year of fine particulates and 31.4 tons (62,741.6 pounds) per year of CO2 (carbon dioxide).
Emissions from electrical power generation associated with this project are estimated to be 3.1 tons (6,134.1 pounds) per year of NOx (nitrogen oxides), 10.7 tons (21,336.0 pounds) per year of SO2 (sulfur dioxide) and 1,573.5 tons (3,147,060.0 pounds) per year of CO2 (carbon dioxide).
PLUS 2007-02-10
Page 17 of 22
VOC NOx SO_2 $PM_{2.5}$ CO_2
Mobile 19.2 15.9 11.7 1.0 1604.9
Residential 7.7 0.9 0.7 0.9 31.4
Electrical
Power
3.1 10.7 1573.5
TOTAL 26.9 19.9 23.1 1.9 3209.8
For this project the electrical usage via electric power plant generation alone totaled to produce an additional 3.1 tons of nitrogen oxides per year and 10.7 tons of sulfur dioxide per year.

A significant method to mitigate this impact would be to require the builder to construct Energy Star qualified homes. Every percentage of increased energy efficiency translates into a percent reduction in pollution. Quoting from their webpage, http://www.energystar.gov/:
"ENERGY STAR qualified homes are independently verified to be at least 30% more energy efficient than homes built to the 1993 national Model Energy Code or 15% more efficient than state energy code, whichever is more rigorous. These savings are based on heating, cooling, and hot water energy use and are typically achieved through a combination of:
building envelope upgrades,
high performance windows,
controlled air infiltration,
upgraded heating and air conditioning systems,
tight duct systems and
upgraded water-heating equipment."
The Energy office in DNREC is in the process of training builders in making their structures more energy efficient. The Energy Star Program is excellent way to save on energy costs and reduce air pollution. They highly recommend this project development and other residential proposals increase the energy efficiency of their homes.
They also recommend that the home builders offer geothermal and photo voltaic energy options. Applicable vehicles should use retrofitted diesel engines during construction. The development should provide tie-ins to the nearest bike paths, links to mass transit, and fund a lawnmower exchange program for their new occupants.

Acknowledged

State Fire Marshal's Office – Contact: Duane Fox 856-5298

These comments are intended for informational use only and do not constitute any type of approval from the Delaware State Fire Marshal's Office. At the time of formal submittal, the applicant shall provide; completed application, fee, and three sets of plans depicting the following in accordance with the Delaware State Fire Prevention Regulation (DSFPR):

Acknowledged

a. **Fire Protection Water Requirements**:

Where a water distribution system is proposed for single-family dwellings it shall be capable of delivering at least 500 gpm for 1-hour duration, at 20-psi residual pressure. Fire hydrants with 1000 feet spacing on centers are required.

Acknowledged

Where a water distribution system is proposed for townhouse type dwellings it shall be capable of delivering at least 1000 gpm for 1-hour duration, at 20-psi residual pressure. Fire hydrants with 800 feet spacing on centers are required.

Acknowledged

For the Community Center, the water distribution system is to be capable of delivering at least 1000 gpm for 1-hour duration, at 20-psi residual pressure is required. Fire hydrants with 800 feet spacing on centers.

Acknowledged

Where a water distribution system is proposed, the infrastructure for fire protection water shall be provided, including the size of water mains for fire hydrants and sprinkler systems.

Acknowledged

Fire Protection Features:

All structures over 10,000 sqft aggregate, such as the proposed Community Center, will require automatic sprinkler protection installed.

Acknowledged

Buildings greater than 10,000 sqft, 3-stories or more, over 35 feet, or classified as High Hazard, are required to meet fire lane marking requirements

Acknowledged

Show Fire Department Connection location (Must be within 300 feet of fire hydrant), and detail as shown in the DSFPR.

Acknowledged

Show Fire Lanes and Sign Detail as shown in DSFPR

Acknowledged

b. Accessibility:

All premises, which the fire department may be called upon to protect in case of fire, and which are not readily accessible from public roads, shall be provided with suitable gates and access roads, and fire lanes so that all buildings on the premises are accessible to fire apparatus. This means that the access road to the subdivision from the main roads leading into the community must be constructed so fire department apparatus may negotiate it.

Acknowledged

Fire department access shall be provided in such a manner so that fire apparatus will be able to locate within 100 ft. of the front door.

Acknowledged

Any dead end road more than 300 feet in length shall be provided with a turnaround or cul-de-sac arranged such that fire apparatus will be able to turn around by making not more than one backing maneuver. The minimum paved radius of the cul-de-sac shall be 38 feet. The dimensions of the cul-de-sac or turn-around shall be shown on the final plans. Also, please be advised that parking is prohibited in the cul-de-sac or turn around.

Acknowledged

The use of speed bumps or other methods of traffic speed reduction must be in accordance with Department of Transportation requirements.

Acknowledged

The local Fire Chief, prior to any submission to our Agency, shall approve in writing the use of gates that limit fire department access into and out of the development or property.

Acknowledged

c. Gas Piping and System Information:

Provide type of fuel proposed, and show locations of bulk containers on plan.

Acknowledged

d. **Required Notes:**

Provide a note on the final plans submitted for review to read " All fire lanes, fire hydrants, and fire department connections shall be marked in accordance with the Delaware State Fire Prevention Regulations"

Proposed Use
Alpha or Numerical Labels for each building/unit for sites with multiple buildings/units
Square footage of each structure (Total of all Floors)
National Fire Protection Association (NFPA) Construction Type
Townhouse 2-hr separation wall details shall be shown on site plans
Maximum Height of Buildings (including number of stories)
Note indicating if building is to be sprinklered
Name of Water Provider
Letter from Water Provider approving the system layout
Provide Lock Box Note (as detailed in DSFPR) if Building is to be sprinklered
Provide Road Names, even for County Roads

Preliminary meetings with fire protection specialists are encouraged prior to formal submittal. Please call for appointment. Applications and brochures can be downloaded from our website: www.delawarestatefiremarshal.com, technical services link, plan review, applications or brochures.

Acknowledged

Department of Agriculture - Contact: Scott Blaier 698-4500

The Delaware Department of Agriculture has no objections to the proposed application as the owner intends to seek annexation into the Town of Laurel, and the *Strategies for State Policies and Spending* encourages environmentally responsible development in Investment Level 2 and 3 areas.

Right Tree for the Right Place

The Delaware Department of Agriculture Forest Service encourages the developer to use the "Right Tree for the Right Place" for any design considerations. This concept allows for the proper placement of trees to increase property values in upwards of 25% of appraised value and will reduce heating and cooling costs on average by 20 to 35 dollars per month. In addition, a landscape design that encompasses this approach will avoid future maintenance cost to the property owner and ensure a lasting forest resource.

Native Landscapes

The Delaware Department of Agriculture and the Delaware Forest Service encourages the developer to use native trees and shrubs to buffer the property from the adjacent land use activities near this site. A properly designed forested buffer can create wildlife habitat corridors and improve air quality to the area by removing six to eight tons of carbon dioxide annually and will clean our rivers and creeks of storm-water run-off pollutants. To learn more about acceptable native trees and how to avoid plants considered invasive to our local landscapes, please contact the Delaware Department of Agriculture Plant Industry Section at (302) 698-4500.

Tree Mitigation

The Delaware Forest Service encourages the developer to implement a tree mitigation program to replace trees at a 1:1 ratio within the site and throughout the community. This will help to meet the community's forestry goals and objectives and reduce the environmental impacts to the surrounding natural resources. To learn more, please contact our offices at (302) 349-5754.

Acknowledged

Public Service Commission - Contact: Andrea Maucher 739-4247

Any expansion of natural gas or installation of a closed propane system must fall within Pipeline Safety guidelines. Contact: Malak Michael at (302) 739-4247.

Acknowledged

Delaware State Housing Authority – Contact Vicki Walsh 739-4263

This proposal is a site plan review of a planned active adult community for 250 units on 77 acres located on the south side of Discount Land Road, east of the intersection of Discount Land Road and US 13, near Laurel. According to the *State Strategies Map,* the proposal is located in an Investment Level 2 area and inside the growth zone. As a general planning practice, DSHA encourages residential development inside growth zones, where residents will have proximity to services, markets, and employment opportunities. According to the most recent real estate data collected by DSHA, the average home price in Sussex County is $246,000. However, families earning respectively 100% of Sussex County's median income only qualify for mortgages of $174,485, thus creating an affordability gap of $71,515. Furthermore, the elderly are the fastest growing segment of our population, specifically in Sussex County. We encourage both the Town of Laurel and the developer to coordinate setting aside some of the units to be affordable to the elderly low- and moderate-income households as part of the annexation process. In addition, coordination can be done with the Diamond State CLT

to ensure the units stay affordable in perpetuity.

Acknowledged

Department of Education – Contact: John Marinucci 739-4658

This proposed development is within the Laurel School District. DOE offers the following comments on behalf of the Laurel School District.

1. Using the DOE standard formula, this development will generate an estimated 125 students.

2. DOE records indicate that the Laurel School Districts' *elementary schools* ***are not at or beyond*** *100% of current capacity* based on September 30, 2006 elementary enrollment.

3. DOE records indicate that the Laurel School Districts' *secondary schools* ***are not at or beyond*** *100% of current capacity* based on September 30, 2006 secondary enrollment.

4. While the Laurel School District secondary and elementary schools are not currently beyond capacity, ***the district does NOT have adequate student capacity to accommodate the additional students likely to be generated from this development*** given the number of planned and recorded residential sub divisions within district boundaries. This development is identified as an active adult community. Unless the development is age restricted by deed, the development, in conjunction with other planned developments will cause significant burden to the Laurel School District.

Acknowledged. This community is planned to be a deed restricted "active adult" aged 55 and beyond residential neighborhood.

5. The DOE requests that the developer contact the Laurel School District Administration to address the issue of school over-crowding that this development has the potential to cause.

Given the "active adult" nature of the planned community, we see no need to involve the Laurel School District Administration.

6. DOE requests developer work with the Laurel School District transportation department to establish developer supplied bus stop shelter ROW and shelter structures, interspersed throughout the development as determined and recommended by the local school district.

Acknowledged

Sussex County – Contact: Richard Kautz 855-7878

No comment about the project. The site is to be entirely within the Laurel limits and does not directly impact County services or properties outside the town limits.
The town is encouraged to avoid the creation of new enclaves when annexing, to eliminate existing enclaves during its negotiation of the annexation agreement, and to notify the Sussex County Planning Department when the annexation becomes effective.

As requested earlier in this report, we have forwarded a copy of our response to the Town of Laurel for their review and files. As always, if you should have questions regarding any aspect of this matter, please do not hesitate to contact our office accordingly.

Sincerely,
Land Tech Land Planning, LLC

Jeffrey A. Clark, RLA

file: nealplusresponse.ltr
enclosures: noted
cc: Michael Pouls without enclosures
Mr. Paul Frick, Code Enforcement Officer
Town of Laurel, Delaware with enclosures

JCM ENVIRONMENTAL

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POULS PARCEL 74

Rare, Threatened, and Endangered Species Habitat Review

100 Lake Drive, Suite 3
Newark, Delaware 19702
(302) 737-9335 FAX 737-9546
www.jcmenv.com

Dover Office 302.734.7160

Georgetown Office 302.854.9138

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POULS PARCEL 74
SUSSEX COUNTY, DELAWARE

RARE SPECIES-HABITAT ASSESSMENT REPORT

PREPARED AT THE REQUEST OF:

Land Tech Land Planning, LLC
1118 Atlantic Avenue, Suite 202
Ocean View, Delaware 19970

Joseph M. McLaughlin — 30 April 07
Environmental Specialist — Date

Jodi L. Herstad — 4.30.07
Environmental Scientist — Date

This report was prepared for the exclusive use of Land Tech Land Planning, LLC, unauthorized duplication is prohibited.

PURPOSE:

This document presents the results of a rare species survey and habitat review conducted on the property known as Pouls Parcel 74, located in Sussex County, Delaware ("the Property").

The database search by The State of Delaware, Department of Natural Resources and Environmental Control (DNREC) has been requested, and results are still pending. However, based on the site visit and resource review, no potential issues are anticipated.

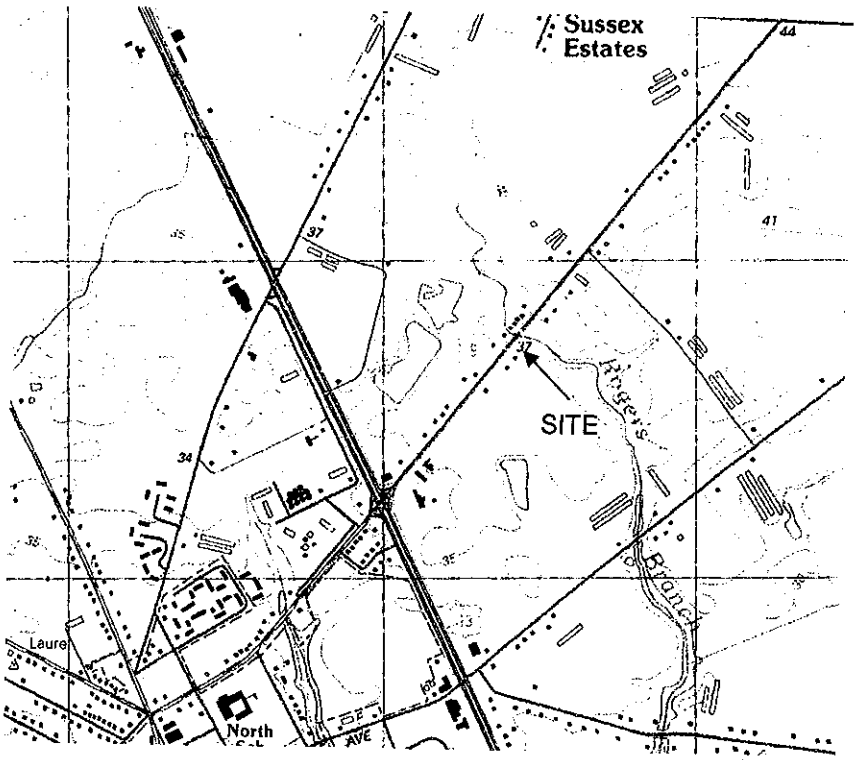
The habitat review results and field observations are summarized in this report. All information contained within this report has been field collected and summarized by JCM Environmental.

INTRODUCTION:

Site Description

The Property is located north of Laurel in Sussex County, Delaware at Latitude 38°-34'-29.5" North and Longitude 75°-33'-29" West. The +/- 0.50 acre Property (Tax Parcel # 232-12.00-74.00) consisted primarily of woodlands, with an open, disturbed area in the central portion. The Property is bordered by woodlands to the north, woodlands and a residence to the east, Route 13 to the south, and woodlands to the west.

USGS Map



METHODS:

A site plan showing existing conditions, including: property boundaries, roads, tree lines, waterways and other points of reference was used in conjunction with a 2002 color infrared (CIR) aerial photograph to estimate locations of land cover types and to identify various habitat types. Data point locations were estimated based on the physical features mapping and CIR photography.

Any species observations or unique or rare habitat types or features were noted during the site investigation.

The site investigation consisted of visual observations of all land cover types and habitat types on the site. Data was collected in representative areas with respect to vegetative cover, tree sizes, soil types, and other natural and man-made conditions.

A site visit was conducted on April 20, 2007. At this time, two data points were established in the wooded portions of the site as depicted on the attached map. The mown lawn and storage areas were assessed, and found to be typical areas with no rare species or habitats present.

Forest Stand Data Collection Methods:

The forest stand delineations were based on data collected from 0.1-acre plots. All live trees within each plot were measured for diameter at breast height (DBH). All trees ≥6" DBH were recorded along with their species. Additional data collected included species present within the shrub, herbaceous and vine layer; animal species observed and soil characteristics. The soils exposed at each plot were observed using a 2.5" Dutch auger. Borings were made to a depth of 18 inches and soil color and texture were noted.

Data Point Map

Other Land Cover Types

These areas were assessed for vegetative composition. Formal data collections were not a part of this study.

RESULTS:

Habitat Type Designations

The various land use/land cover types were mapped below and designated with letter descriptors. Woodland areas were marked with a W, buildings with a B, disturbed areas with a D, and streams with an S.

Each use and cover type is described below.

Woodlands

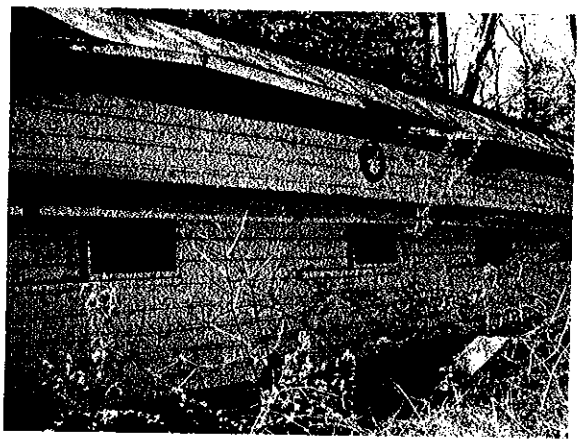
A portion of woodlands existed on site. Dominant tree species within this area consisted of: Southern Red Oak, White Oak, Red Maple, Loblolly Pine, and American Holly. The understory consisted of Sweet Pepperbush and American Holly. Average size of the trees in this area ranged from 7.7-21 inches DBH. No rare or endangered species or communities were observed in this area.

Soils within this area had a sandy texture, and were classified as 10YR 3/2 and a mix of 10YR 4/2 and 10YR 5/1.

Vegetation present within the Woodland area	
Common Name	**Scientific Name**
Red Maple	*Acer rubrum*
Sweet Pepperbush	*Clethra alnifolia*
American Holly	*Ilex opaca*
Loblolly Pine	*Pinus taeda*
White Oak	*Quercus alba*
Southern Red Oak	*Quercus falcata*

Buildings

The Property contained two abandoned buildings, one of which appeared to be an old chicken coup. They did not appear to support and rare or endangered communities or species.



Streams

A small portion of Rogers Branch was found running through the eastern side of the subject site. No vegetation was observed within the limits of the stream, and minimal vegetation was present on the banks. This vegetation included predominantly upland species such as Fescue and Henbit.

No rare or endangered communities or species were found within this area.

Disturbed Area

A disturbed area was observed within the central portion of the site. This area appeared to have been cleared within the past few years. However, it does not appear as though any type of rare community was disturbed in the process of the onsite clearing.

CONCLUSIONS:

The State of Delaware has been contacted for records of Rare, Threatened or Endangered Species on the Property. However, due to adjacent land use and comments received in the past, no potential problems are anticipated. Additionally, the adjacent site was reviewed through the PLUS process (PLUS 2007-02-10). Through this, the State recommended that existing riparian buffers be preserved around Rogers Branch to hinder pollutants from entering the water system. They recommended this be done to help protect potential rare species downstream.

The wooded portions on the site appear to be the remnants of an old hedgerow. The forest area present on the site was comprised of typical species found on the Coastal Plain in Delaware. No rare, threatened or endangered species or communities were observed on the property, and no specimen trees were noted in the wooded areas.

DATA SHEETS

PROJECT:Pouls Parcel 74
PLOT: 1
PLOT SIZE: .10 acre
DATE: 4/20/07
CATEGORY: Woodland

TREES					
Scientific Name	**Common Name**	**DBH (inches)**		**Average DBH**	**BA/Species**
Acer rubrum	Red Maple	9.6		9.6	0.5026
Ilex opaca	American Holly	7.7		7.7	0.3234
Pinus taeda	Loblolly Pine	21.5		21.5	2.5211
Quercus alba	White Oak	14.7	15.8	15.3	2.5401
Quercus falcata	Southern Red Oak	20.8		20.8	2.3596

Canopy Cover	100%
Trees with DBH of 6.0-17.99	4
Trees with DBH ≥ 18	2
Trees within plot	6
Trees/Acre	60
Average DBH/plot	15.0
Basal Area of Plot	8.2468
Basal Area/Acre	82.468

SPECIES OBSERVED	
Scientific Name	**Common Name**
Understory Trees	
Clethra alnifolia	Sweet Pepperbush
Ilex opaca	American Holly
Shrubs	
None	
Seedlings/Saplings	
None	
Herbaceous	
None	

SOILS		
Depth (inches)	**Matrix Color**	**Texture**
0-18"	10YR 3/2	Sand

PROJECT: Pouls Parcel 74
PLOT: 2
PLOT SIZE: .10 acre
DATE: 4/20/2007
CATEGORY: Woodland

TREES						
Scientific Name	**Common Name**	**DBH (inches)**			**Average DBH**	**BA/Species**
Acer rubrum	Red Maple	11.7			11.7	0.7466
Ilex opaca	American Holly	6.2			6.2	0.2097
Quercus alba	White Oak	19.3			19.3	2.0316
Quercus falcata	Southern Red Oak	18.1	13.5	11.6	14.4	3.5147

Canopy Cover	85%
Trees with DBH of 6.0-17.99	4
Trees with DBH ≥ 18	2
Trees within plot	6
Trees/Acre	60
Average DBH/plot	13.4
Basal Area of Plot	6.5026
Basal Area/Acre	65.026

SPECIES OBSERVED	
Scientific Name	**Common Name**
Understory Trees	
Ilex opaca	American Holly
Shrubs	
Ilex opaca	American Holly
Clethra alnifolia	Sweet Pepperbush
Seedlings/Saplings	
None	
Herbaceous	
None	

SOILS		
Depth (inches)	**Matrix Color**	**Texture**
0-10"	10YR 4/3	Sand
11-18"	2.5Y 6/3	Sand

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POULS PROPERTY
SUSSEX COUNTY, DELAWARE

RARE SPECIES-HABITAT ASSESSMENT REPORT

PREPARED AT THE REQUEST OF:

Land Tech
118 Atlantic Avenue
Suite 202
Ocean View, Delaware

Joseph M. McLaughlin — 23 Oct 06
Environmental Specialist — Date

Jodi R. Hurst — 10/23/06
Environmental Scientist — Date

PURPOSE:

This document presents the results of a rare species survey and habitat assessment conducted on the property known as the Pouls site, Sussex County, Delaware ("the Property").

The database search conducted by The State of Delaware, Department of Natural Resources and Environmental Control (DNREC) concluded that no records existed for rare, threatened or endangered species or habitat on the Property. The State did identify the following concerns in their review:

1. There are records of numerous rare species downstream; therefore, maintaining adequate forested riparian buffers would be extremely important for minimizing impacts to these species and to water quality.

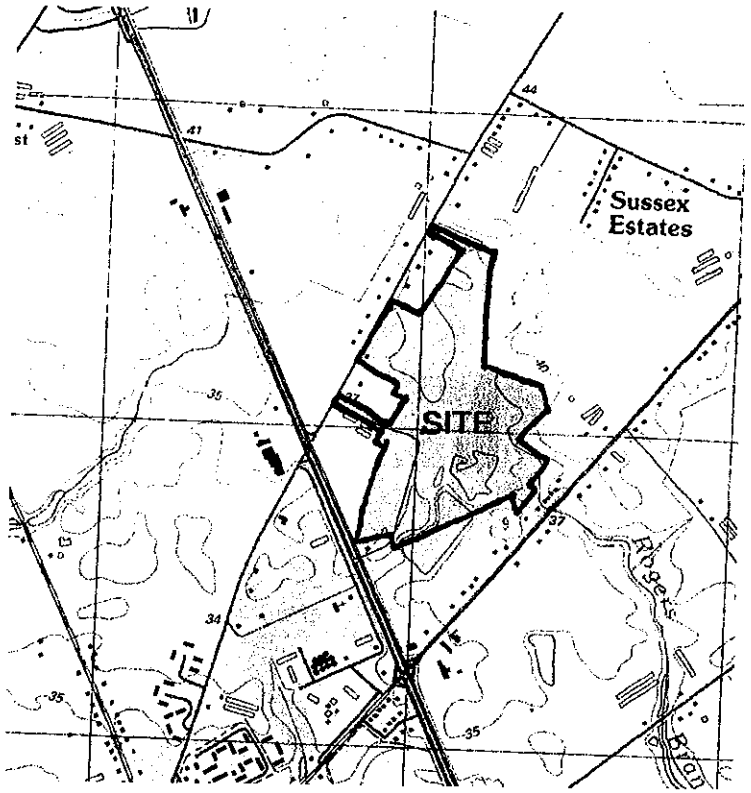
2. If possible, forest fragmentation should be avoided to keep from separating wildlife populations.

The habitat review results and field observations are summarized in this report. All information contained within this report has been field collected and summarized by James C. McCulley IV, Environmental Consultants, Inc (JCM Environmental).

INTRODUCTION:

Site Description

The Property is located in Sussex County, Delaware at Latitude 38°-34'-36.80" North and Longitude 75°-33'-40.00" West (Tax Map Parcel number 232-12.00-65.00. The ±77-acre subject property is bordered by residential properties and agricultural fields to the north, wooded/undeveloped properties to the east, residential properties, agricultural fields, and wooded areas to the south, and residential properties, various businesses, and Discount Land Road to the west.



METHODS:

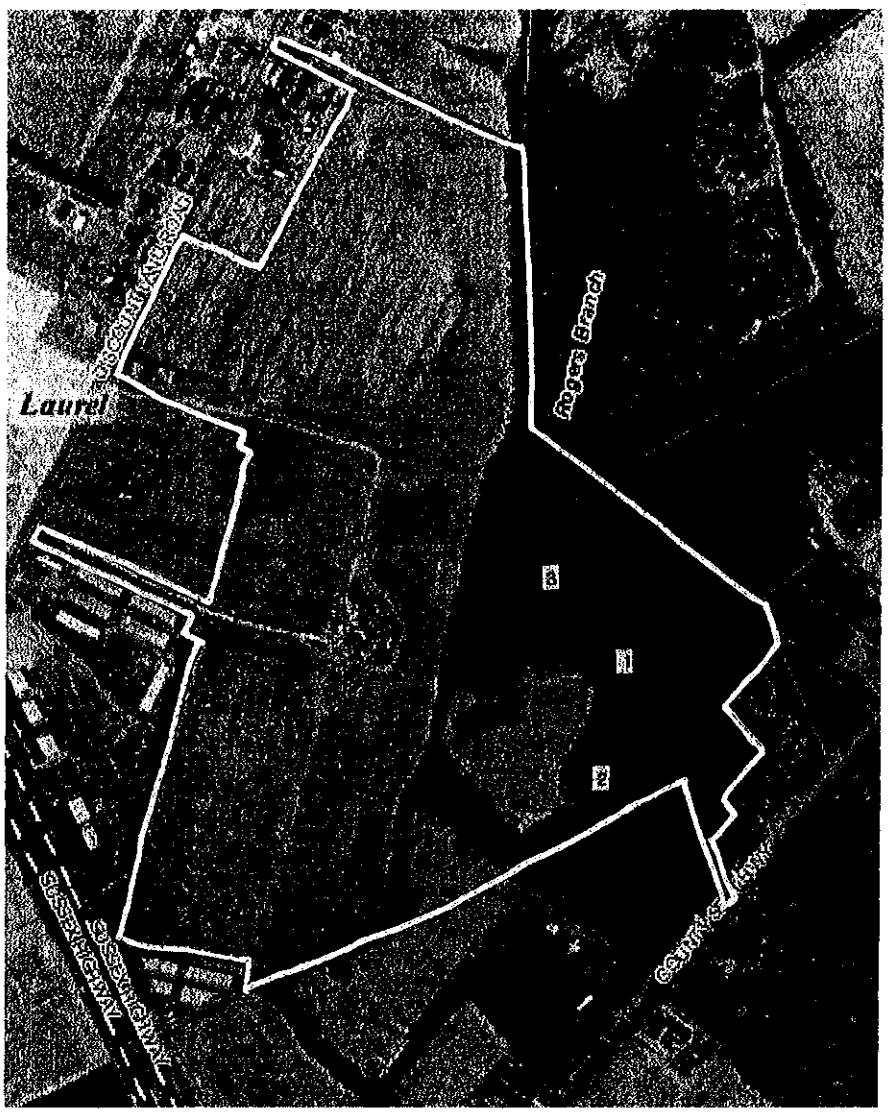
A tax parcel map showing existing conditions, including: property boundaries, roads, tree lines, waterways and other points of reference was used in conjunction with a 2002 color infrared (CIR) aerial photograph to estimate locations of land cover types and to identify various habitat types. Data point locations were estimated based on the physical features mapping and CIR photography.

Any species observations or unique or rare habitat types or features were noted during the site investigation.

The site investigation consisted of visual observations of all land cover types and habitat types on the site. Data was collected in representative areas with respect to vegetative cover, tree sizes, soil types, and other natural and man-made conditions.

A site visit was conducted on August 24, 2006. At this time, three (3) data points were established in the wooded portions of the site as depicted on the attached map.

Data Point Location Map



Forest Stand Data

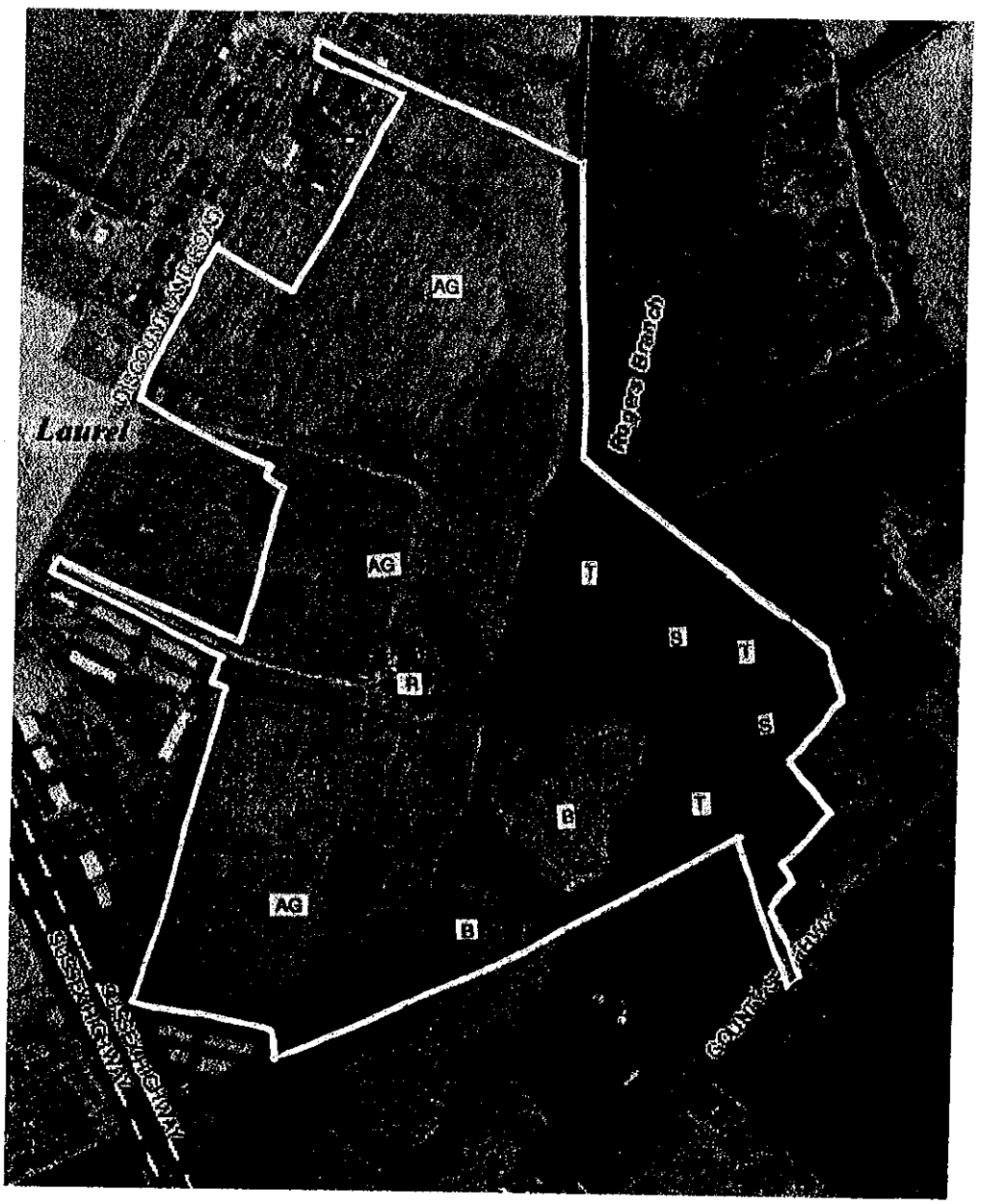
The forest stand delineations were based on data collected from 0.1-acre plots. All live trees within each plot were measured for diameter at breast height (DBH). All trees with a span of 6" DBH were recorded along with their species. Additional data collected included species present within the shrub, herbaceous and vine layer; and animal species observed.

Habitat Type Designations

The various land/use/land cover types were mapped below and designated with letter descriptors, for example; Transitional Forest areas with a T, Intermittent Streams with an S, Agricultural Fields with an AG, Residences with an R, and Borrow Pits with a B.

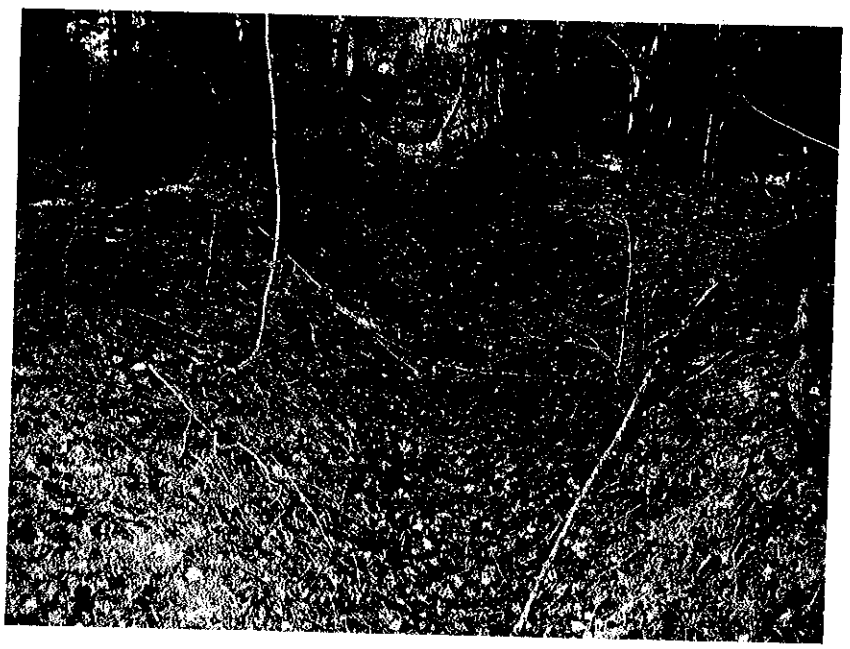
Each land use and cover type is described below.

Land Cover Map



Waters of the United States

Waters of the United States were observed onsite in the form of a ditch located in the east-central portion of the site. This ditch is classified as ephemeral before the wetlands begin, and intermittent below the wetlands areas. This classification was based on surrounding land cover, and evidence of periodic flow in areas of the channel as well as saturated soils, but cannot be proven without a groundwater study. No vernal pool type wetlands were observed. There was no vegetation present within the streambank limits, but adjacent dominant vegetation included: Common Greenbrier, American Holly, Loblolly Pine and Red Maple.



Ephemeral portion of a stream in the eastern portion of the site.

Vegetation present around the Intermittent Stream	
Common Name	**Scientific Name**
Red Maple	*Acer rubrum*
American Holly	*Ilex opaca*
Sweetbay Magnolia	*Magnolia virginiana*
Sweet Pepperbush	*Clethra alnifolia*
Loblolly Pine	*Pinus taeda*
Sassafras	*Sassafras albidum*
Common Greenbrier	*Smilax rotundifolia*

Transitional Forest Areas

Transitional forest areas were observed in the eastern portion of the Property. The areas consisted primarily of Loblolly Pine, American Holly, and Red Maple. There was virtually no shrub or herbaceous layers. Small portions of land within the transitional forest areas were classified as forested wetlands. These areas were directly adjacent to the channel running through the subject site. Animal species observed within these areas included: Fowler's Toad (*Bufo folweri*), and Eastern Box Turtle (*Terrapene c. carolina*).

Vegetation present within the Transitional Forest Areas	
Common Name	**Scientific Name**
Red Maple	*Acer rubrum*
Sweet Pepperbush	*Clethra alnifolia*
American Holly	*Ilex opaca*
Sweetbay Magnolia	*Magnolia virginiana*
Black Gum	*Nyssa sylvatica*
Loblolly Pine	*Pinus taeda*
Water Oak	*Quercus nigra*
Sassafras	*Sassafras albidum*
Blueberry sp. Seedlings	*Vaccinium* sp.

Borrow Pit Areas

Two borrow pit areas were located in the southern portion of the property. One of these borrow pits was only partially within property boundaries. Each of the two areas is currently inactive, and is functioning as an open water/wetland complex. The bottom surface of the borrow pits was covered in a layer of silt. This area does not appear to need any further studies done. Animal species observed within these areas included: Eastern Painted Turtle (*Chrysemys p. picta*), Southern Leopard Frog (*Rana sphenocephala*), American Bullfrog (*Rana catesbeiana*), Great Egret (*Ardea alba*), and Greenback Heron (*Butorides virescens*).

Agricultural Areas

A large portion of the subject property consisted of agricultural fields planted with corn (*Zea mays*). Other plant species encountered within the agricultural fields included: Morning Glory (*Ipomoea* sp.), Pokeweed (*Phytolacca americana*), and Foxtail (*Setaria* sp.). An Eastern Gartersnake (*Thamnophis s. sirtalis*) was also observed within this area.

Residential Areas

There was one residential area located in the central portion of the subject property, which was connected to Discount Land Road via an unpaved driveway. This area had a number of buildings and residential trash piles associated with it. The residential area was surrounding by agricultural fields, and there were no wetland, forested, or Waters areas directly adjacent to this area.

CONCLUSIONS:

The State of Delaware has no records of Rare, Threatened or Endangered Species on the Property.

The forested areas of the site were assessed and were found to be typical transitional forests common of Sussex County, Delaware. No rare, threatened or endangered plant species were observed in this area and no specimen trees were noted in these areas. No unique habitat types, rare, threatened or endangered animal species were observed in these areas.

In addition, the agricultural fields, stream areas, and borrow pit areas were assessed, and no rare, threatened, or endangered species were observed within these areas. The agricultural fields were found to be typical areas consisting primarily of corn plantings. The borrow pits are no longer in use, and are functioning as an open water/wetland complex. The stream is considered to be intermittent and ephemeral, and no endangered species were found utilizing the area.

Based on the results of this study, there did not appear to be any potential rare, threatened, or endangered species present on the site at the time of this investigation. JCM Environmental can provide guidance related to forest and corridor preservation and maintenance, as well as water quality protection if requested.

ADDITIONAL COMMENTS:

The State of Delaware addressed additional concerns that are outside of the scope of the request made for information related to rare, threatened or endangered species impacts on the Property.

* *If possible, forest fragmentation should be avoided to keep from separating wildlife populations.*
* *Maintaining adequate forested riparian buffers would be extremely important for minimizing impacts to downstream species, and for water quality.*

DATA SHEETS

PROJECT: Pouls Property
PLOT: 1
DATE: 8-24-06
PLOT SIZE: .10 acre
CATEGORY: Transitional Forest

TREES				
Scientific Name	**Common Name**	**DBH (inches)**	**Average DBH**	**BA/Species**
Acer rubrum	Red Maple	7.9	7.9	0.3404
Ilex opaca	American Holly	7.2	7.2	0.2827
Nyssa sylvatica	Black Gum	21.4	21.4	2.4977
Pinus taeda	Loblolly Pine	14.0	14.0	1.0690
Quercus velutina	Black Oak	18.7	18.7	1.9072

Canopy Cover	90%
Trees with DBH of 6.0-17.99	3
Trees with DBH ≥ 18	2
Trees within plot	5
Trees/Acre	50
Average DBH/plot	13.84
Basal Area of Plot	6.097
Basal Area/Acre	60.97

SPECIES OBSERVED	
Scientific Name	**Common Name**
Clethra alnifolia	Sweet Pepperbush
Ilex opaca	American Holly
Nyssa sylvatica	Black Gum seedlings

PROJECT: Pouls Property
PLOT: 2
DATE: 8-24-06
PLOT SIZE: .10 acre
CATEGORY: Transitional Forest

TREES					
Scientific Name	Common Name	DBH (inches)		Average DBH	BA/Species
Acer rubrum	Red Maple	8.6		8.6	0.4034
Pinus taeda	Loblolly Pine	22.6	21.2	21.9	5.2369
Quercus alba	White Oak	14.1		14.1	1.0843

Canopy Cover	85%
Trees with DBH of 6.0-17.99	2
Trees with DBH ≥ 18	2
Trees within plot	4
Trees/Acre	40
Average DBH/plot	16.6
Basal Area of Plot	6.7246
Basal Area/Acre	67.246

SPECIES OBSERVED	
Scientific Name	Common Name
Pinus taeda	Loblolly Pine
Acer rubrum	Red Maple
Clethra alnifolia	Sweet Pepperbush
Vaccinium sp.	Blueberry sp. seedlings
Ilex opaca	American Holly
Magnolia virginiana	Sweetbay Magnolia

PROJECT: Pouls Property
PLOT: 3
DATE: 8-24-06
PLOT SIZE: .10 acre
CATEGORY: Transitional Forest

TREES					
Scientific Name	**Common Name**	**DBH (inches)**		**Average DBH**	**BA/Species**
Ilex opaca	American Holly	6.7	16.0	11.4	1.641
Pinus taeda	Loblolly Pine	17.4		17.4	1.6513
Quercus rubra	Northern Red Oak	18.3		18.3	1.8265

Canopy Cover	90%
Trees with DBH of 6.0-17.99	3
Trees with DBH ≥ 18	1
Trees within plot	4
Trees/Acre	40
Average DBH/plot	14.6
Basal Area of Plot	5.1188
Basal Area/Acre	51.188

SPECIES OBSERVED	
Scientific Name	**Common Name**
Ilex opaca	American Holly
Pinus taeda	Loblolly Pine